upper compartment by means of a shelf, D, extending almost across. The circulation of the air is as follows: air from the outside penetrates into the lower compartment through an opening, T, in the side; it acquires there a suitable temperature from the heaters, M, and rises into the upper compartment, moisture being obtained by its passage through a wet sponge, E. These heaters are capable of holding three-quarters of a pint of water. Five of these can be used at one time in the apparatus; but four are found sufficient to maintain the required temperature of 31° to 32°, provided the room is not less than 16°.

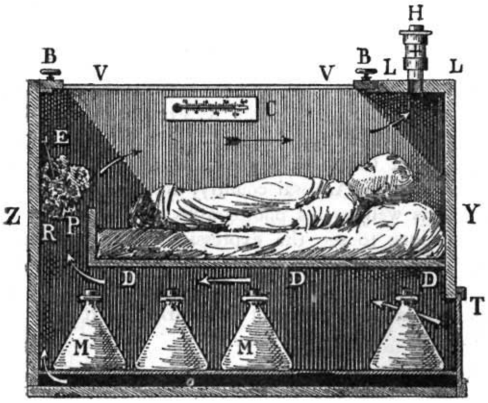

FIG. 1.—Dr. Tarnier's New Apparatus.

The infant is generally kept in the incubator from seven to fourteen days. This is about the *average* time, but it varies considerably, and cases have been known when the period has been extended to five weeks. The child may be taken from the incubator every two hours to be fed; but it must only be exposed to the air as short a time as possible, and care must be taken that the room is of a suitable temperature.

It is of interest to notice the decrease of mortality. The usual percentage of deaths of infants under 2000 grammes is 66 per cent., but by the use of the incubator this high figure is reduced to 36 per cent. Of those children born prematurely, few only survive; whereas it is now possible to save about 45 per cent.

While great care is taken to help to maintain the heat of the body of the child, it is also necessary to allow its system to renew that heat. If, therefore, the child is not strong enough to take food, some means must be taken of injecting it. In this case a probe, consisting of an india-rubber tube, with a graduated glass funnel at the end, is used. This instrument is inserted in the mouth, and pushed gently down the throat, and going a distance of fifteen centimetres, reaches the stomach. The probe is pressed, and sends the milk into the funnel until a sufficient quantity has been administered, when it is rapidly removed to prevent the return of the fluid.

Judging from the accounts which have been published, the improved apparatus seems to be very successful.

NOTES

THE following remarks, abridged from an editorial in the February number of the *American Naturalist*, will be cordially supported by many men of science on this side of the Atlantic:—"While the primary object of the university is instruction, there are several reasons why original research is of more than incidental importance to its prosperity. The mastery of his subject, which is characteristic of the man who advances the knowledge of it, is an essential of a good teacher. The belief in this truth is so general, that the teacher who is known as a discoverer will more successfully attract students to his classes than he who is not so known. But, apart from this, the general reputation of a school before the public is more surely affected by the research work that issues from its faculty, than the managing bodies of some of them seem willing to admit. We believe that those universities which permit of the production of original work by those of its professors who have proven thomselves competent for it, are wise above those who do not do so. Those who load such men with teaching, so as to forbid such work, reduce their prosperity. The managers will be wise to preserve for these men sufficient leisure to enable them to advance the frontiers of the known, and thus to obtain juster views of things as they are, and to bring us ever nearer to a comprehension of the great laws, whose expressions it is their business to teach to the growing intelligences of the nation."

THE Société Industrielle du Nord de la France has awarded a gold medal to M. Moissan, in recognition of his scientific investigations.

THE Council of the Sanitary Institute have accepted an invitation from the City Council of Leeds, to hold a Sanitary Congress and Health Exhibition in that city in the month of September next.

ACTING under the provisions of a rule which empowers the annual election by the Committee of nine persons "of distinguished eminence in science, literature, the arts, or for public services," the Committee of the Athenæum Club have elected Dr. David Ferrier, F.R.S., Professor of Neuro-pathology at King's College, London, a member of the Club.

THE Council of the Society of Arts attended at Marlborough House on Tuesday, February 16, when his Royal Highness the Prince of Wales, K.G., President of the Society, presented the Albert Medal to Prof. David Edward Hughes, F.R.S., "in recognition of the services he has rendered to arts, manufactures, and commerce, by his numerous inventions in electricity and magnetism, especially the printing telegraph and the microphone."

THE new building for the South African Museum at Capetown has now been completed, and fitted with the so called "Dresden cases," which are made entirely of glass and iron, and are believed to be absolutely dust-proof and air-tight. Under the superintendence of Mr. W. L. Sclater, the Director, the collections are in process of removal from their former quarters into the new building, which is expected to be opened to the public by March 1.

WE regret to record the following deaths of men of science abroad:—Dr. Timothée Rothen, Director of the International Telegraph Bureau at Berne, and author of numerous treatises on telegraphy and telephony.—Prof. Karl Theodor Weierstrass, Professor of Mathematics in the University of Berlin, and Foreign Member of the Royal Society.—Prof. M. Klimm, Professor of Hydraulics in the Polytechnikum at Budapest.

REFERRING to Mr. Evans's letter in last week's NATURE, upon immunity from stings of bees, Mr. T. A. Gerald Strickland sends us a note on a similar case. A bee-keeper, having accidentally upset a hive, was so badly stung that he was laid up for a few weeks, but afterwards the stings of the bees did not affect him, though before his involuntary inoculation they caused great pain and swelling. The accident happened some years ago, but the bee-keeper was still indifferent to stings last autumn.

The Royal Academy of Belgium has awarded gold medals, of value 600 francs, to Dr. C. De Bruyne, of Ghent, for his essay on the influence of phagocytes in the development of the Invertebrata; to M. G. Cesàro, of Trooz (Liège), for his essay on Belgian minerals; to MM. J. F. Heymans and O. Van der Stricht, of Ghent, for their conjoint paper on the peripheric nervous system of *Amphioxus*; and to M. Jean Massart, for his essay on the cicatrisation of plants.

The prosperous *Société de l' Industrie Minérale* of Saint-Etienne invites original communications from its members on mining, metallurgy and mechanics, for which the Council will award premiums varying from 500 to 1000 francs. The subjects to be dealt with are: in the mining section, the working of thick coal seams, and underground haulage by compressed air or electric locomotives; in the metallurgical section, the methods for removing dust from combustible gases, the manufacture of open-hearth steel, and the utilisation of the waste heat of furnaces for steam boilers; and, in the mechanical section, the use of high pressure, cut-off gears, compounding and condensation in winding engines, and the employment of superheating in steam engines. The papers must be written in, or translated into, French, and must be in the Secretary's hands by December 31, 1897.

The international aerostatic ascents, which for some time past have been contemplated, took place on the 18th inst. at Paris, Berlin, and Strasburg. Three unmanned balloons were liberated at about 10 a.m. (local time) at each station. The German Emperor witnessed the Berlin operations, but the balloon burst. The Strasburg balloon disappeared in the north-east, and has not yet been recovered. The Paris balloon descended, after having travelled during a little more than two hours in the N.N. ¼ E., and ran 102 kilometres. The temperature recorded was 60°, at an altitude of more than 10,000 metres. An apparatus, constructed by Cailletet, for bringing back to land the air of the upper atmosphere, was successful, but the gas captured has not yet been analysed. The records are confused to some extent. but the balloons and instruments are safe.

Mr. Alexander Whyte gives an interesting description of his travels in North Nyasa, in the *British Central Africa Gazette*, published at Zomba. Mr. Whyte stayed at Karonga for a short time, and then went through Napata to Chifungu's village, where he obtained some interesting specimens; among others, a fine oriole and a tiny little chestnut-backed owl, neither of which he had previously met; also a pretty little squirrel, only one of which he had previously collected. The botany of the neighbouring hills and valleys he found most interesting. Journeying from Chifungu's village, the hills became higher and only sparsely clad with stunted forest, short grass, and weird-looking deformed shrubs. One looked like a miniature four-foot baobab, afflicted with elephantiasis, the soft smooth-barked branches being abnormally thick and suddenly tapering to a sharp point. All the rocky ridges had a species of Velozia upon them. This species was similar in habit to the new one (*V. splendens*) discovered by Mr. Whyte on the Mlanje range, but the branches form a more acute angle with the stem, and it is believed to be another species. Near the Wyie River some interesting birds were collected; among others, a bright little kingfisher very similar to *Cayx tridactylus* of India and Ceylon. Following the Wyie River the grand Nyika range was eventually approached, and, after a stiff climb, the plateau of the range was reached. Towards the end of last November, Mr. Whyte was collecting zoological and botanical specimens on the top of Mlosa mountain and plateau. He reports that he has procured some interesting specimens, several of which he thinks are new to science. The top of Mlosa plateau consists of rolling hills covered with fine short grass, well-wooded in the gullies, and with a plentiful supply of water. The plateau is not quite equal in extent to the Zomba plateau, but lies at about the same elevation (between five and six thousand feet above the sea), and the scenery is even finer than that of Zomba. Access is obtained to the Mlosa plateau by more easy gradients than the Zomba plateau or that of Mlanje.

The Gold Coast, Ashanti, and Kumassi, is the subject of an illustrated article, by Mr. George K. French, in the *National Geographic Magazine* for January. Mr. French journeyed from Cape Coast Castle to Kumassi, through Prahsu, or the Prah River, and the Adansai country, and his descriptions of the natives, as well as his photographs, are very instructive. It is satisfactory to see the expression of an opinion that "England's enlightened policy in other parts of Africa will undoubtedly be applied here, and will result in the ultimate spread of civilisation throughout this darkest part of the dark continent."

The fourth number of the current volume of the *Mittheilungen von Forschungsreisenden und Gelehrten aus den deutschen Schutzgebieten* contains a number of notes of geographical and meteorological importance. An abstract is given of the results of several hundred boiling-point determinations made by Dr. Stuhlman and First-Lieut. Schlobach in Usaramo, Ukami, and Uluguru, during 1894-5: reduced with more intelligent care than is usually bestowed on such data. Lieut. Merker contributes a note, with sketch map, of two new lakes between Kilimandjaro and Meru. Further abstracts of meteorological observations at three stations in Konde—Manow, Wangemannshöhe, and Ikombe—are given, and also at Jaluit, in the Marshall Archipelago.

The *Board of Trade Journal* makes the following announcements:—An Exhibition will be held at Bergen in Norway in 1898, to consist of an International Fisheries Section and of national sections for industries, agriculture, and fine arts. The grounds of the Nygård Park (Nygårdsparken) have been selected as the site of the Exhibition.—A Transmississippi and International Exhibition will be held at the City of Omaha, in the State of Nebraska, in the year 1898, for the exhibition of the resources of the United States of America, and the progress and civilisation of the Western Hemisphere, and for a display of the arts, industries, manufactures, and products of the soil, mine, and sea.—The Parliament of New South Wales has decided to hold an International Exhibition at Sydney in 1899. According to statements made in the House, the cost of the Exhibition will be 250,000*l.*, and the Australian products shown thereat will be sent to Paris in 1900.

The connection between relative humidity and the manufacfacture of cotton fabrics, is probably too slender to be seen by the "practical man" in Great Britain, or to need any consideration from a practical British Government. In the United States, however, there are Government departments which frequently make inquiries into the bearings of natural phenomena upon industry. A few days ago we received a "Report on the Relative Humidity of Southern New England and other Localities," prepared under the direction of Mr. Willis L. Moore, Chief of the U.S. Weather Bureau, by Mr. Alfred J. Henry. Upon the face of it, one would hardly expect more than meteorological statistics and conclusions from this *Bulletin*. But mark how the facts work out. One of the conditions essential to the greatest degree of success in the spinning and weaving of cotton fabrics is a humid state of the atmosphere, and the more constant the degree of humidity the greater is the measure of profitable spinning, especially as regards the finer numbers. The average spinning of England is finer than that of the United States, and the average of the latter varies greatly with geographical location, the finer spinning being done almost wholly in New England. The attention of the Weather Bureau having been called to the importance of the subject and to the probable extension of the manufacture of cotton over a much wider area than it has yet occupied, a comparison was instituted with a view of ascertaining how the natural humidity of certain portions of the United States, particularly the South, where the extension of the art is most pronounced, compares with that of the southern shore of New England. It is with the results of the investigation made in this connection that the *Bulletin* deals, and we have no doubt that the observations and conclusions from them will be used to advance cotton manufacture in the United States. The idea that the tendency to concentrate the cotton manufacturing industry in Lancashire was originally due to the advantage of climatic conditions, is, of course, not entertained. Indeed, it appears from the report that thus far in the development of the cotton manufacturing industry too little account has been taken of climatic conditions as affecting the quantity or quality of the output. For the benefit of enterprising cotton manufacturers the suggestion is made that the control of both temperature and humidity by artificial means seems to be the final solution of the problem in all cases where the establishment of mills in a relatively dry district is contemplated.

WE are pleased to notice a marked improvement in the first number of the new volume of the *Rivista Scientifico Industriale*, published in Florence. The editor and founder, Dr. Guido Vimercati, has now the co-operation of Dr. Carlo del Lungo. The most noteworthy feature of the present number is a complete bibliography of all Italian works relating to Röntgen rays published in 1896. It is the intention of the editors to deal with other branches of physics in the same manner in subsequent issues. The number is accompanied by excellent stereoscopic figures of an optical bench for interference experiments, illustrating a paper by Prof. G. Grattarola.

DR. G. TOLOMEI, writing in the same journal, describes an interesting series of experiments on the presence of argon in plants. The author inferred the absence of argon in fully-developed vegetable tissues. Experiments were also made with the nodule-forming Leguminosæ, and with their nitrifying bacteria, and the results were the opposite of that just cited. In the case of nitrogen obtained from the growing roots of a young pea, argon was obtained from the tissues, but in smaller quantities than from the culture of bacteria; and hence the author maintains that the argon fixed by the bacteria does not enter into chemical combination, on the ground that if it did so, it would, if once absorbed, remain in the plant instead of disappearing in the older tissues.

PROF. W. SOMERVILLE has carried out a series of comparative experiments to test the value of the pure cultures of the various varieties of bacteria that inhabit the roots of our more important Papilionaceous plants, now sold under the name of "nitragen." The investigation was described before the Botanical Society of Edinburgh on January 14. Experiments were made with peas, broad beans, lucerne, and broad red clover. Only in the case of the peas did the application of nitragen result in an increase in the yield, and even then the variations in the weights of produce were too small to make it possible to say definitely that the inoculating substance affected growth either one way or another. The experiments were carried out in a garden attached to the Durham College of Science, in which it may be assumed that peas and beans have frequently been cultivated during recent years. As the soil was thus well supplied with the bacteria that associate with the roots of these plants, Prof. Somerville agrees that it is not surprising that the application of a pure culture of these bacteria should have been inoperative. But as regards red clover and lucerne, neither of these plants has ever been cultivated in the garden, and the probability is that not a single plant of lucerne ever grew in the garden, or, indeed, in any fields in the neighbourhood. The conditions, therefore, were to be regarded as distinctly favourable for exhibiting the action of the specific bacteria of these plants, and yet they failed to produce any effect. Apparently some improvements are required in the methods of manufacture or application in order to make nitragen of service in agriculture and horticulture.

THE influence of intellectual work on the blood-pressure in man is the subject of a paper, by MM. A. Binet and N. Vaschide, in the January number of the *Psychological Review*. The instrument used by the authors was Mosso's Sphygmomanometer, which has the advantage of indicating the results by tracings. The method of experimentation consisted in taking the pulse under increasing pressure from 0 to 140 mm. of mercury: this test was made at first while the subject was in a state of rest, without excitement or preoccupation of any kind; then the same experiment was repeated while the subject was absorbed in a difficult mental calculation. Two tracings were thus obtained for comparison, and the differences between them could be attributed to the intellectual labour, unless some chance circumstance—as an emotion, a shiver, &c.—prevented the two experiments from being strictly comparable. From the results obtained, it appears that the maximum amplitude of the pulsation tracings was greater during rest than during intellectual work; it was 5 mm. in the former case, and only 3·5 mm. in the latter. During all the mental calculations, there was evidently a diminution of the pulse, as the result of a more or less marked vascular constriction. In both states, the maximum amplitude of the pulse appears to have been reached when the blood-pressure was 80 mm. Beyond this pressure, the amplitude decreased more rapidly during the state of rest than during mental activity, and a pressure of from 100 to 120 mm. was found to completely suppress the pulsation both in a state of repose and in a state of intellectual labour. To determine the difference between the circulation in a state of intellectual labour and that of rest, a counter-pressure of 110 mm. was chosen. A register of the pulse with this pressure was made for about half a minute, and then the subject was told to commence a mental calculation. The first three or four pulsations after he was told to begin were of the same character as the preceding ones, but afterwards the pulsations became twice and, often, three times as great. This increase in amplitude maintained itself, in general, without increase or diminution, and with great regularity during the whole of the mental calculation. When the problem had been solved, the pulsation gradually diminished, and finally reached the original condition.

THE fourth part of vol. ii. of "Fresenius' Quantitative Analysis," translated by Mr. Chas. E. Groves, F.R.S., has just been published by Messrs. J. and A. Churchill.

THE following are the arrangements for science lectures at the Royal Victoria Hall, Waterloo Road, during March:—March 2, "A Lump of Salt," by Prof. Holland Crompton; March 9, "Cyprus," by Mr. A. H. Smith; March 16, "The Valley of Kashmir," by Mr. Walter R. Lawrence; March 23, "Marine Food Fishes," by Mr. Gilbert C. Bourne; March 30, "Quicksilver," by Dr. H. Forster Morley.

THE *Boletin del Instituto Geológico de México*, by Dr. C. Sapper, describes the geology and physical geography of Yucatan. It includes chapters on the mineral and agricultural productions of the peninsula, and meteorological tables.

THE fifth volume of the *Journal of Malacology*, founded by Mr. Walter E. Collinge, and now edited by Mr. Wilfred Mark Webb, has been received. A valuable feature of each number is a descriptive bibliography of current malacological literature, compiled by Mr. E. R. Sykes and Mr. S. Pace.

THE *Bulletin de l'Herbier Boissier*, edited by Prof. Chodat, of Geneva, publishes a very interesting account, by the Belgian botanist Crépin and MM. Autran and Durand, of the plants cultivated by Boissier in 1885, the year of his death, in the gardens at Valleyres and Chambésy. The number of species enumerated is nearly 5000.

WE have received an important excerpt from the sixteenth annual report of the U.S. Geological Survey (1894-95). The subject is "Some Analogies in the Lower Cretaceous of Europe and America," and the author, Mr. Lester Ward. Mr. Ward devoted four years to a somewhat careful study of the Lower Cretaceous of America, especially of the Potomac formation; and he also spent a year or so in examining the structure of Portland, the Isle of Wight, and other typical localities. His own observations, and the work done by others, lead him to claim that certain general resemblances do exist between the Lower Cretaceous strata of America and those of Europe.

L. LORENZ'S "Œuvres Scientifiques," with notes by H. Valentiner, are being published at the expense of the Carlsberg Foundation. The first part of the first volume has just been issued by the firm of Lehmann and Stage, Copenhagen. It contains papers on the determination of the direction of vibrations of ether by polarisation of diffracted light, and also by reflection and refraction; on the reflection of light at the separating surface of two transparent isotropic substances; on the theory of light (two memoirs); and on the identity of the vibrations of light and electricity. The editor's notes on the papers are very full.

IN the years 1889, 1892, and 1896, Prof. Carl Rabl contributed three important memoirs on the "Theorie des Mesoderms" to the *Morphologisches Jahrbuch*. These papers have now been brought together and published in volume form, under the same title, by Wilhelm Engelmann, of Leipzig. The volume deals with the development and differentiation of the mesoderm, a subject to which Prof. Rabl has devoted much attention. To complete the work, a second volume, dealing with the differentiation of the mesoderm in the higher vertebrates, from amphibia upwards, will be published in the course of this year. We propose to review this important contribution to vertebrate morphology when it is completed, and content ourselves now with announcing the publication of the first volume.

THE scheme which the late Emperor of Russia set on foot for constructing a canal through Russia from the Baltic to the Black Sea, and which has been in abeyance since his death, has lately been revived. M. Flourens, the French Minister for Foreign Affairs, who in his private capacity was commissioned by Alexander III. to investigate the practicability of constructing a water-way for the passage of men-of-war from one sea to the other, has recently been to St. Petersburg, and had a conference with the present Emperor, and has been directed to consult the Ministers of Finance and Communication as to its practicability. The proposed canal would be 994 miles long, and would have a depth of 29 feet. It would start from the Gulf of Riga, follow the course of the Duna, the Beresina, and the Dnieper to the Black Sea, thus placing the naval dockyards of Libau in the north and Nikolaief in the south in direct communication. The estimated cost is £20,000,000. There is at the present time a navigation for small vessels and timber rafts along this route, but the way is interrupted by a long series of cataracts on the Dnieper, and very expensive works would have to be carried out to overcome these and the other obstacle in the way.

THE following lectures will be given at the Imperial Institute during the month of March, on Monday evenings, at 8.30 p.m.:—March 1, "Ceylon in Ancient and Modern Times," by Mr. H. W. Cave; March 8, "Imperial Aid to Solar Research, with an account of recent Eclipse Expeditions," by Mr. J. Norman Lockyer, C.B., F.R.S.; March 15, "Some Indian Dye-stuffs," by Prof. J. J. Hummel; March 22, "The Timber Supply of the British Empire," by Dr. W. Schlich, Professor of Forestry at the Royal Indian Engineering College, Cooper's Hill. In addition to these lectures, which are open to Fellows and persons introduced by them, a popular lecture, to which the public will have free admission, will be given at 8 o'clock p.m. on March 2, on "Queensland of to-day: some Notes on its Progress and Resources," by Mr. C. S. Dicken, C.M.G., Acting Agent-General for Queensland.

INTEREST in science is encouraged by the scientific societies connected with many of our public schools. The twenty-seventh annual report of the Wellington College Natural Science Society shows that varied and instructive meetings were held during 1896. Phenological observations were made, meteorological observations continuously recorded, and collectors of insects, plants, shells and eggs, showed enthusiasm in collecting and in determining species. The late Sir John Pender left a bequest in his will to permanently establish the Pender Prize, annually given by the Society for an essay on a subject connected with any branch of science. Preference is given to essays containing original work of any kind. Prizes of this kind are far more likely to create investigators, and thus extend a knowledge of the true inwardness of nature, than are prizes based upon the results of examinations.

THE tenth annual report of the Liverpool Marine Biology Committee and their Biological Station at Port Erin, by Prof. W. A. Herdman, F.R.S., is an excellent record of results. The large green *Thalassema*, of which several specimens, all more or less mutilated, were trawled from the deep water to the south-west of Port Erin at Easter, seems to be an undescribed form. Prof. Sherrington and Dr. Noël Paton have independently investigated the green pigment spectroscopically. They report that it is a very remarkable and apparently unknown pigment, which is not allied to hæmoglobin or chlorophyll. It is not a respiratory pigment, and is apparently nearer to "bonellein," described by Dr. Sorby from the Gephyrean *Bonellia viridis*, than to any other known pigment; but differs markedly in some respects, and cannot be identical with it. This is only one of the many interesting items in Prof. Herdman's report on work accomplished under the auspices of his Committee.

PROF. S. P. LANGLEY'S report on the operations of the Smithsonian Institution for the year ending with June 1896, has just been distributed. As has been already announced, the Institution has now completed its first half-century of existence. To commemorate this event, arrangements have been made for the publication of a memorial volume, which will give an account of the Institution, its history, its achievements, and its present condition. The volume will be a royal octavo of about 750 pages. It has been prepared under the general editorship of the late Dr. Goode, and will be found as worthy of the Institution as was every other task entrusted to his hands. The division is into two parts: one on the history of the Institution, and the other containing appreciations of the work of the Institution in different departments of science, written by various men of science in the United States. The Institution has renewed for three years the lease of the Smithsonian table at the Naples Zoological Station. The table has been constantly occupied since October 1, 1893, the date of the first appointment, with the exception of May 1894. During the intervals of his official duties, Prof. Langley has continued to experiment with the aërodrome, until he has reached a measure of success which, he announces, justifies him in making the statement that mechanical flight has now been attained. On May 6 last, a mechanism, built chiefly of steel and driven by a steam engine, made two flights, each of over half a mile (see NATURE, vol. liv. p. 80). Since then Prof. Langley says this result has been doubled. In the astrophysical observatory Prof. Langley has continued his researches upon the solar spectrum. The results of the year's work are summed up by the statement that an entirely new stage of accuracy has been reached by the elimination of sources of error, of long standing, in the spectrobolometric processes, and that as a result of this accuracy it is expected that the positions of between 200 and 300 lines in the infra-red spectrum will shortly be published.

BY his further investigation of the reversible decomposition of hydriodic acid gas, published in the February number of the *Zeitschrift für physikalische Chemie*, Mr. Max Bodenstein removes all doubt as to the normal character of this change, thus adding another to the very small number of reactions between gases which are known to follow the laws of mass action. In a former investigation he had found that, at a given temperature, the fraction of the hydriodic acid decomposed when equilibrium was attained was not independent of the pressure of the gas. Since the decomposition takes place without change of volume, theory indicates that, at constant temperature, the equilibrium should be unaffected by a change of pressure. This discrepancy is removed by the experiments described in the present paper. Known quantities of hydrogen and iodine are heated in sealed glass bulbs at a constant temperature until equilibrium is attained, whereupon the quantities of hydrogen, iodine, and hydriodic acid present are determined. This leads to the, at first sight, somewhat surprising result that equivalent quantities of hydrogen and iodine have disappeared. In one experiment neither hydriodic acid nor iodine were found in the heated bulb, the whole of the iodine used having disappeared. The cause of this loss is found in the combination of hydriodic acid with the glass; part of the iodine is found as sodium iodide; the greater part, however, appears to form some compound insoluble in water. When the diminution in the concentration of the hydriodic acid gas, to which the combination of part of it with the glass gives rise, is taken into account, it is found, in accordance with theory, that the fraction of the hydriodic acid decomposed, at constant temperature, when equilibrium has been reached, is independent of the pressure.

IN a second paper, on the decomposition of hydriodic acid gas by sunlight, it is found that on prolonged exposure the whole of the hydriodic acid is decomposed; the change is thus not reversible. The intensity of the light remaining constant, the quantity decomposed in unit time is simply proportional to the quantity of undecomposed hydriodic acid present, and is not affected by its pressure (within the limits 0·5 and 1 atmosphere approximately). These are the characteristics of a monomolecular reaction, and it therefore follows that each molecule of hydriodic acid is decomposed independently, each ray of light, of proper vibration frequency, simply breaking up the hydriodic acid molecules in its path.

THE addition to the Zoological Society's Gardens during the past week include a Green Monkey (*Cercopithecus callitrichus*, ♂) from West Africa, presented by Mr. John Laxson; a Rhesus Monkey (*Macacus rhesus*, ♀) from India, presented by Mr. W. H. Camm; a Grey Lemur (*Hapalemur griseus*) from Madagascar, presented by Mr. W. B. Dyer; a Greater Vasa Parrot (*Coracopsis vasa*) from Madagascar, presented by Surgeon Lieut.-Colonel F. H. Gelbresa; an Upland Goose (*Chloephaga magellanica*, ♂) from the Falkland Islands, deposited; five Azara's Opossums (*Didelphys azaræ*), ten Burrowing Owls (*Speotyto cunicularia*) from South America, eight Guira Cuckoos (*Guira piririgua*) from Para, two Uvæan Parrakeets (*Nymphicus uvæensis*) from the Island of Uvea, Loyalty Group, a Smew (*Mergus albellus*, ♀) from Holland, purchased.

OUR ASTRONOMICAL COLUMN.

PERIODICAL COMETS.—The present year seems to be somewhat barren of appearances of periodical comets, while, on the other hand, the two following years will be distinguished by the returns of several well-known comets.

This year's visitors are limited to three altogether, namely, 1890 VII., D'Arrest's, and Swift's. The first named seems, from all accounts (*Observatory*, No. 249), to be most probably very feeble in intensity, since at its appearance in 1890 it was an excessively faint object. The comet was described by Dr. Spitaler at Vienna, and a computation showed that it had a period of 6·4 years, so that it should make its perihelion passage on March 11. Those who wish to search for this comet will find an ephemeris in *Astr. Nach.*, No. 3370.

D'Arrest's comet, discovered at Leipsic in June of the year 1851, has also a period of nearly the same length, namely, 6·5 years. This comet has not been observed at every period, having been seen only in the years 1857, 1870, 1877, 1890. It is probable that even this year it will be missed, in consequence of its unfavourable position. A daily search ephemeris (March to August) for this year will be found to be given by M. G. Leveau in the *Bulletin Astronomique* for last month (January).

Swift's comet will not be seen, owing to the fact that it will be lost in the sun's rays, as the earth will be in the opposite part of her orbit to that nearest the comet at perihelion passage.

A comet that may be picked up again this year is Brooks' 1886 IV., and observations of this comet are wanted, as the period is not yet accurately determined.

A list of the comets which are due to appear in the next two years is quite a formidable one, as given by Mr. W. F. Denning in the current number of the *Observatory*:—

1898.	Comet.	1899.	Comet.
April ...	Pons-Winnecke.	Jan. ...	Denning (1881 V.).
May ...	Encke.	Mar. ...	Tempel (1886 I.).
June ...	Swift (1889 VI.).	April ...	Barnard (1892 V.).
June ...	Wolf.	May ...	Tuttle (1858 I.).
Sept. ...	Tempel (1867 II.).	May ...	Holmes (1892 III.).
		July ...	Tempel (1873 II.).

OBSERVATIONS OF MARS AT MEUDON.—M. Perrotin, whose observations of Mars are very well known, commenced at Meudon, in December of last year, a series of observations of that planet. The instrument he used had a diameter of 0·83 metres, and he has been able to make some very interesting observations, which have been communicated to the *Comptes rendus* for February 15. A careful survey of the planet has led him to state that the disc is apparently divided, as regards general aspect and colour, into four zones lying parallel to the equator. Two of these comprise the equatorial regions. Further, he has noticed that at equal distances from the centre of the disc the surface details do not appear with equal facility in the four zones. The canals are always most distinct towards the middle of the disc, and they are visible for a further distance along a meridian than along a parallel. M. Janssen remarks, with regard to the latter point, that the observations show that the atmosphere of Mars contains bodies capable of condensing, and thereby of increasing the transparency of the atmosphere, as the polar regions are approached, which is in accordance with observations of the water vapour in the atmosphere of the earth. We may mention that the above observations are of special interest, since M. Perrotin is observing with a different instrument from that with which he has made all his previous observations.